the commission stated, users that could not "obtain 'systems solutions' to their service needs from the provider of basic services due to structural separation [were] forced to accept services that do not best serve their needs."[129] Precisely the same effect is produced by the interLATA restrictions on the BOCs. Users with sophisticated needs cannot turn to their local service provider for end-to-end packet-switched and ATM network services. Moreover, BellSouth would have an incentive to construct "backbone" facilities that end users need to complete non-local transmissions. As customers demand greater speed of service, it will be important for all service providers to ensure that there is sufficient capacity throughout the national network.

The Commission merely gives lip service to the stated goal of promoting investment in and deployment of advanced services unless the Commission recognizes the significant market-opening steps taken by the BOCs, such as BellSouth's strides in Louisiana and South Carolina. Since November 1997, for example, BellSouth has faced a seven-fold increase in the number of access lines lost to competitors in Louisiana. The clear intent of the 1996 Act was to give Americans more telecommunications choices; rebuffing efforts by BOCs to demonstrate competitive local exchange conditions deprives American consumers of an additional interLATA competitor to fulfill their end-to-end networking needs.

Above all else, the Commission's policies for advanced services must minimize regulatory uncertainty. In order to function effectively as a competitive market, participants in the advanced services market need clear direction as early as possible and expedited processing of any advanced services petitions.[130] Consistent with Section 706's demand for prompt action in

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129 *Id.* at 1008.

130 *See US West Phoenix Petition* at 2.

removing regulatory barriers for the deployment of advanced telecommunications capability, prompt relief should be the Commission's top priority.

B. The Commission Must Aggressively Implement Its Section 10 Forbearance Mandate

> *"So what does this mean? For openers, it means no price regulation for residential high speed data services. All companies are new entrants when it comes to these services, and I see no need for price regulation."*[131]

Section 706 commands that advanced services be promoted through robust competition and prescribes regulatory forbearance as a means of fostering such competition. Section 10 in turn directs the Commission to forbear from enforcing any regulatory or statutory requirements that "inhibit or distort competition in the marketplace, represent unnecessary regulatory costs, or stand as obstacles to lower prices, greater service options, and higher quality services for American telecommunications consumers."[132] Dominant carrier regulation of advanced services represents exactly the type of unnecessary obstacle that must be removed.

Specifically, Section 10 *requires* the Commission to forbear from applying any regulation or provision of the Act if the Commission determines that: (1) enforcement is not necessary to ensure that the rates and practices of a telecommunications carrier or service are just, reasonable and not unjustly or unreasonably discriminatory; (2) enforcement is not necessary to protect consumers; and (3) forbearance is consistent with the public interest.[133] In assessing the

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131 Chairman Kennard, *FCBA Remarks*.

132 *Personal Communications Industry Association's Broadband Personal Communications Services Alliance's Petition for Forbearance for Broadband Personal Communications Services, et. al*, WT Docket No. 98-100, Report and Order, FCC 98-134, (rel. July 2, 1998) (*"PCIA Order"*), at ¶ 2.

133 47 U.S.C. § 160(a).

public interest, the Commission must consider whether forbearance will promote competitive market conditions and enhance competition among service providers.[134]

In order to speed the deployment of advanced services to all Americans, the Commission must forbear from enforcing pricing, tariff filing and other restrictions that are appropriate only for dominant carrier services, including (i) any applicable price cap or rate of return regulation for ILEC provision of advanced services, (ii) the requirement that ILECs file tariffs on more than one day's notice with cost support, (iii) restrictions on contract carriage, and (iv) any dominant carrier Section 214 requirements that may apply. As explained below, in the advanced services context where no entity has market power, forbearance will allow ILECs to satisfy consumer demands more efficiently and at lower rates without harming consumers or competition.[135]

1. Pricing, Tariff, And Section 214 Restrictions Are Not Necessary To Ensure Just And Reasonable Rates And Practices

Basic economic principles instruct that "aspects of dominant carrier regulation may hinder competition . . . if applied to a carrier that no longer possesses market power."[136] In a competitive environment, market forces amply protect the public from unreasonably high rates and undue discrimination.[137] Non-dominant firms lack the incentive to charge rates or engage in

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134 47 U.S.C. § 160(b)

135 *Section 214 NPRM*, 12 FCC Rcd at 1132.

136 *Comsat Order* at ¶ 66.

137 *See Section 214 NPRM*, 12 FCC Rcd at 1130 (*citing Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor,* CC Docket No. 79-252, First Report and Order, 85 FCC 2d 1 (1980); Second Report and Order, 91 FCC 2d 59 (1982); Fourth Report and Order, 95 FCC 2d 554 (1983), *vacated sub nom. American Tel. and Tel. Co. v. FCC*, 978 F.2d 727 (D.C. Cir. 1992); Fifth Report

anticompetitive practices because, simply, "customers could always turn to competitors."[138] In the advanced services market, ILECs have no incumbency advantage or market power, and thus, the Commission must not retain dominant carrier regulation for ILECs' advanced services.

The presence of actual and imminent competitors in the advanced services market will ensure just, reasonable, and not unreasonably discriminatory prices and practices by all competitors. Each competitor, ILECs included, starts with *zero* market share and *no* incumbent advantage, and therefore does not have the ability to lock up supply or economic incentive to increase prices.[139] If an ILEC were to charge an above-market price for, or to impose stringent terms and conditions on, ADSL service, for example, consumers could simply switch to another advanced services supplier (*i.e.*, satellite operators or a cable modem). Moreover, current rules requiring mandatory unbundling of local networks, regulation of UNE prices, and collocation afford additional protection against ILECs charging unreasonably high rates or engaging in anticompetitive behavior in the advanced services marketplace. If an ILEC attempted to raise prices or reduce output for ADSL service, other entities could easily undercut such behavior by purchasing UNEs at regulated rates and providing the advanced services themselves.[140]

Nor could a firm such as BellSouth charge predatorily low prices for advanced services. Predatory pricing only occurs when there are barriers to entry and when the predating

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and Order, 98 FCC 2d 1191; Sixth Report and Order, 99 FCC 2d 1020 (1985), *vacated sub nom. MCI Tel. Corp. v. FCC*, 765 F.2d 1186 (D.C. Cir. 1985)).

138 *Section 214 NPRM*, 12 FCC Rcd at 1131 n. 75; *see Comsat Order* at ¶ 9.

139 *See APT Petition* at 18.

140 *Id.* at 17

firm has the ability to raise other prices to recoup its costs.[141] As explained above, barriers to entry in the advanced services market are low. An ILEC could not keep other firms from entering the market for any period long enough to make predation worthwhile. Price cap LECs, moreover, could not recoup the foregone revenues by raising prices on other services, thus predation would not be economically justifiable.

2. Consumers Are Adequately Protected Without Dominant Carrier Pricing, Tariffing, and Section 214 Requirements

Competitive market conditions for advanced services also amply protect consumers. In fact, the Commission has stated that "[c]ompetitive markets are superior mechanisms for protecting consumers by ensuring that goods and services are provided to consumers in the most efficient manner possible and at prices that reflect the cost of production."[142] Thus, a market-based approach for competitive advanced services offers the best form of protection for consumers.

Under a market-based approach, the Commission should forbear from Title II regulation to the maximum extent possible. ILECs would remain subject to Sections 201 and 202 of the Act which, in conjunction with Section 208 complaint procedures, ensure that rates and practices are just, reasonable and not unreasonably discriminatory. ILEC tariff filings, even if

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141 *See Price Cap Performance Review for LECs, et. al*, CC Docket Nos. 94-1, 93-124, 93-197, Second Further Notice of Proposed Rulemaking, 11 FCC Rcd 858, 870-71 (1995); *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Notice of Proposed Rulemaking, 2 FCC Rcd 5208, 5216 (1987).

142 *Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers*, CC Docket Nos. 96-262, 94-1, 91-213, 95-72, First Report and Order, 12 FCC Rcd 15982, 16094 (1997).

streamlined, could still be rejected or suspended and investigated under Section 204.[143] Thus, "[m]arket forces, together with the Section 208 complaint process and the Commission's ability to reimpose tariff-filing and facilities-authorization requirements, [are] sufficient to protect the public interest,"[144] and especially so for competitive advanced services.

3. Forbearance From Dominant Carrier Pricing, Tariffing and Section 214 Requirements For Advanced Services Will Promote Competitive Market Conditions And Enhance Competition

When an entity no longer possesses market power in a relevant market, the Commission must reclassify it as non-dominant in that market.[145] Carrying over dominant carrier regulation into the highly-competitive advanced services environment is unfair, creates inefficiencies, and only hurts consumers by delaying the deployment of advanced services.[146] Conversely, forbearance will stimulate competition by facilitating the even entry of new providers and innovative integrated service offerings designed to meet changing market conditions. Forbearance enables carriers to satisfy consumer demand faster and at lower rates by reducing the costs and delay of a carrier introducing new services or changing rates, as well as the disclosure of competitively-sensitive information to rival carriers.[147] As outlined below, the public interest, and Section 706's explicit command to ensure rapid deployment of advanced services to all

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143 *See Revision to Price Cap Rules for AT&T Corp.*, CC Docket No. 93-197, Report and Order,10 FCC Rcd 3009, 3017 (1995) ("*AT&T Price Cap Order*").

144 *Section 214 NPRM*, 12 FCC Rcd at 1131.

145 *Comsat Order* at ¶ 21.

146 *Comsat Order* at ¶ 12.

147 *Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor*, CC Docket No. 79-252, Fifth Report and Order, 98 FCC.2d 1191, 1199 (1984).

Americans, compel the Commission to promote advanced services competition through aggressive Section 10 forbearance.

a. Relieving Pricing Restrictions

"I am particularly skeptical of price regulation."[148]

Dominant regulatory treatment in the form of pricing restrictions imposes substantial barriers to ILEC full participation in advanced services, and is unnecessary given the market's competitive conditions. With a functioning market, there is a compelling public interest in letting the market -- rather than some artificial constraint -- dictate pricing, for pricing restrictions are intended only to replicate "the discipline of a competitive marketplace."[149] The Commission has long maintained a policy of relaxing pricing regulation as competition develops, and deregulating services subject to effective competition: "Permitting incumbent LECs certain kinds of pricing flexibility in response to the development of competition will allow prices for . . . services to adjust in ways that reflect the underlying economic costs of providing those services without moving outside the range of rates that are just and reasonable."[150]

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148 Commissioner Harold Furchtgott-Roth, Remarks before the International Telecard Association (July 17, 1998).

149 *Price Cap Performance Review for Local Exchange Carriers; Access Charge Reform,* Fourth Report and Order in CC Docket No. 94-1 and Second Report and Order in CC Docket No. 96-262, 12 FCC Rcd 16642, 16701 (1997). *See also Access Charge Reform,* First Report and Order, CC Docket No. 96-262, 94-1, 91-213, 95-72, 12 FCC Rcd 15982, 16093 (1997) (endorsing a market-based approach to price cap regulation that permits "certain pricing flexibility upon a showing that meaningful competitive entry *is possible* within a particular" market) (emphasis added).

150 *Access Charge Reform; Price Cap Performance Review,* First Report and Order, 12 FCC Rcd 15982, 16095 (1997).

Price cap regulation was intended to increase productivity and efficiency while stimulating innovation.[151] The Commission even sought to promote high-speed services such as ISDN when it created the price cap regime, believing that price cap regulation would "increase the LECs' incentive and opportunity to develop and introduce new services, to invest in new technology like ISDN, to innovate, and to upgrade their networks."[152] Where the ILECs have done just that, and where their incumbency offers no unfair competitive advantage, the Commission must allow pricing flexibility. Advanced services, such as ADSL, are more properly viewed as an intended byproduct of price cap regulation, not a cause for competitive concern.

b. Streamlining Tariffing Regulation

The Commission repeatedly has affirmed that tariffing is not necessary to ensure reasonable rates for carriers that lack market power.[153] In fact, the Commission has stated that "traditional tariff regulation of non-dominant carriers is not only unnecessary to ensure just and reasonable rates, but is actually counterproductive since it can inhibit price competition, service innovation, entry into the market, and the ability of carriers to respond quickly to market trends."[154]

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151 *See Price Cap Performance Review for Local Exchange Carriers,* CC Docket No. 94-1, Notice of Proposed Rulemaking, 9 FCC Rcd 1687, 1692 (1995) (reasoning that price cap regulation would encourage the LECs to modernize their network and develop advanced applications and new services).

152 *Id.* at 1699.

153 *See, e.g., PCIA Broadband PCS Order*, at ¶ 57; *Tariff Filing Requirements for Nondominant Common Carriers*, CC Docket No. 93-36, Order, 10 FCC Rcd 13653, 13655 (1995) ("*Nondominant Carrier Filing II*").

154 *Tariff Filing Requirements for Nondominant Common Carriers*, Memorandum Opinion and Order, 8 FCC Rcd 6752, 6752 (1993) ("*Range Tariff Order*").

Long tariff notice periods severely distort the market if the carrier is no longer dominant.[155] If ILECs are required to adhere to dominant tariffing requirements for advanced services, they will be subject to potentially protracted Commission review of new service offerings and will be forced to disclose potentially sensitive pricing and other information to rivals. BellSouth, in fact, faces this situation today for its ADSL tariff, which has become effective but its ultimate outcome remains uncertain.

c. Removing Restrictions on Contract Tariffs

ILECs should be permitted to offer advanced services under streamlined regulation that enables ILECs to enter into individually-tailored customer contracts, in the same fashion as interexchange carriers and other non-dominant carriers.[156] Just as with the enhanced services in yesterday's constructs, inherent in the offering of today's advanced services "is the ability of service providers to custom tailor their offerings to the particularized needs of their individual customers."[157] Contract carriage increases "the ability of customers to negotiate service arrangements that best address their particular needs,"[158] and also expands overall available options, which reduces the likelihood of discriminatory or concerted action.

d. Eliminating Section 214 Requirements

> *"Heretofore, businesses had to go to regulators for permission to offer new services, even if consumers desperately wanted those services. And consumers had to go to regulators to get new services even if businesses were desperate to provide those new services. All too often the*

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155 *Comsat Order* at ¶ 66.

156 *See 47* C.F.R. § 61.3(m).

157 *Computer II Final Decision*, 77 FCC 2d at 431.

158 *AT&T Price Cap Order*, 10 FCC Rcd at 3018 (*quoting Competition in the Interstate Interexchange Marketplace*, CC Docket No. 90-132, Report and Order, 6 FCC Rcd 5880, 5899 (1991)).

regulatory middle man was not needed, and only led to delay and higher prices."[159]

To the extent that any remaining Section 214 requirements apply, given that carriers no longer need authorization to extend lines,[160] the Commission should forbear from applying such requirements to advanced services. Congress enacted Section 214 to prevent useless duplication of facilities that could impose increased rates on captive customers or discontinuance of service in areas served by a single carrier.[161] ILEC provision of advanced services creates new high-bandwidth channels of communication that are provided only to customers seeking to use those advanced services, without impacting POTS customers whose rates are protected through price cap regulation. As a provider facing competition for advanced services, an ILEC such as BellSouth "lacks the incentive to invest in unneeded facilities,"[162] because of its inability to recoup the cost of those facilities. Thus, applying Section 214 requirements to advanced services is unnecessary and slows advanced services deployment.

C. Section 251 Must Be Interpreted In A Reasonable Manner Appropriate For Advanced Services And Facilities

"Where networks are open, I see no reason to require discount resale or unbundling of these new services and advanced technologies that are available to all."[163]

No other advanced services entrants are forced to choose between dismantling their advanced service offerings or offering such services subject to intrusive regulation that prevents

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159 Commissioner Harold Furchtgott-Roth, Remarks before OPASTCO (July 25-29, 1998).

160 Telecommunication Act of 1996 § 402(b)(2), *codified at* 47 U.S.C. § 214 note; *see Section 214 NPRM.*

161 *Section 214 NPRM*, 12 FCC Rcd at 1115, 1121.

162 *LEC In-Region Interexchange Order*, 12 FCC Rcd at 15804.

163 Chairman Kennard, *FCBA Remarks*.

them from realizing economies of scope. However, rather than taking Congress's directive and lessening the regulatory burdens associated with the provision of advanced services, as Congress directed, the Commission has suggested imposing new and more onerous unbundling and collocation requirements upon ILECs' advanced services.[164]

Through its Section 251(d)(2) authority to specify network elements,[165] the Commission has the power to interpret unbundling obligations in a manner appropriate for advanced services. Section 251's resale, unbundling and collocation requirements were intended to provide access to the ILECs' local exchange networks, *not* to newly-emerging, competitive services.[166] As the Alliance for Public Technology stated, "CLECs' need for access to ILEC facilities has never been shown to be based on access to future advanced telecommunications capabilities . . . but rather to the existing network."[167] Subjecting ILECs' advanced services to unbundling requirements discourages ILEC investment and innovation, creates a disincentive for competitors to build out facilities, and prevents ILECs from differentiating service offerings in the evolving advanced services market.[168] Instead, the regulatory model that the Commission

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164 *Section 706 MO&O/NPRM at* ¶¶ 150, 164-76.

165 47 U.S.C. § 251(d)(2).

166 *See Cable Working Paper* at 1 ("[T]he 1996 Act's primary approach to communications services, service providers and facilities neither fully reflects nor anticipates the impact of Internet-based communications capabilities on existing networks and the regulatory regimes that govern them.").

167 *APT Petition* at 16.

168 *See Local Competition Order,* 11 FCC Rcd at 15744 (recognizing that "providing unbundled access to AIN call-related databases at cost, and in particular providing access to the incumbent LEC's software applications that reside in the AIN databases, may reduce the incumbent's incentive to develop new and advanced services using AIN.").

ultimately adopts for advanced services should provide ILECs with the flexibility to provide such services using a business structure based on market conditions, not on regulatory fiat.

D. The Commission Should Provide Leadership To State Commissions

Section 706's instruction to remove barriers to investment in and to promote deployment of advanced services applies equally to the Commission and *each state commission.*[169] The Commission should provide strong leadership to state commissions by encouraging them to forbear from any applicable pricing, tariffing and other restrictions imposed on only one class of advanced services competitors, and to interpret flexibly Section 251's collocation, resale, and unbundling requirements, including pricing standards. The Commission should use this inquiry to send a clear message to the States that open markets are the top national telecommunications priority. Such leadership is consistent with Section 706's explicit policy mandate.[170]

VII. CONCLUSION

> *"At the FCC, our job is to fire the starting gun and let the race begin. We should not micromanage the race. We simply need to make sure that the race is fair and open to all who want to compete."*[171]

Technology and new applications are driving rapid deployment of advanced communications capabilities to large users, which will flow to residential, rural and small business users most efficiently if the Commission embraces a long-term vision for advanced services that encourages open and full participation by *all* competitors -- telco, cable, terrestrial wireless and

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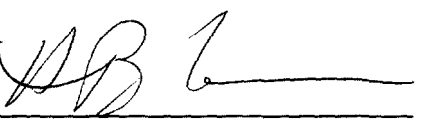
169 Section 706(a).

170 The Senate provision on which Section 706 was based, Section 304 of S. 652, contained express preemption authority, which was deleted in conference. *See* H.R. Rep. No. 104-458 (1996) at 210; S. Rep. No. 104-23 (1995) at 50. Section 253 of the Act gives the Commission ample authority to remove state-imposed barriers to entry. 47 U.S.C. § 253.

171 Chairman Kennard, *FCBA Remarks*.

satellite providers alike. In this race, no competitor -- particularly the ILECs -- should be "advantaged or disadvantaged by government."[172] Only a market-based approach that allows all participants to offer advanced services unfettered by regulatory restraint will satisfy the mandate of Congress and usher in the era of widespread deployment of advanced services to all Americans.

Respectfully submitted,



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September 14, 1998

172 *See* Chairman Kennard, *NCTA Remarks*.

EXHIBIT A

TO

BELLSOUTH'S NOI COMMENTS

FORRESTER
The Forrester Report

People & Technology Strategies

Volume Five, Number Four
August 1998
Christopher Mines
Mary Modahl
Shar VanBoskirk

Broadband Hits Home

By 2002, 16 million U.S. households -- a quarter of all on-line homes -- will use broadband connections to the Internet. Service and content providers must begin now to reshape their communication, commerce, and entertainment offerings to weave them into the lives of broadband consumers.

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Broadband Hits Home

REPORT CONCLUSIONS

High-speed Internet access is a reality for less than one-half of 1% of U.S. consumers. Will it ever spread to a mass market? This report examines the development of broadband Internet access for consumers, concluding that:

- **Broadband will reach a mass market.** Burgeoning availability and compelling value will drive rapid consumer adoption of broadband. By the end of 2002, 16 million U.S. households -- a quarter of all on-line homes -- will have high-speed PC connections to the Internet.
- **Cable will lead the charge.** More than 80% of broadband households will use cable-based service providers like @Home and Road Runner. ADSL connections will account for the other 20%, as AOL upgrades 10% of its members to premium broadband service by 2002.
- **Broadband content will kick in.** Content and service providers will create new entertainment, commerce, and media services that will integrate on-line resources into the lives of broadband consumers.

Research Methodology

To prepare this report, Forrester interviewed 27 Web content managers at mainstream media, commerce, and entertainment sites to gauge developer interest and activity in broadband applications and services. We also had in-depth discussions with executives at service providers @Home, Ameritech, AT&T, BellSouth, Comcast, DirecPC, Frontier GlobalCenter, GTE, IBM, MediaOne, Mindspring, Qwest, Road Runner, SBC, US West, UUNET; and network hardware and software suppliers 3Com, Aware, Bay Networks, Broadcom, CableLabs, Cisco, Com21, Compaq, Escalate Networks, Intel, Microsoft, Motorola, Samsung, Scientific-Atlanta, and the Universal ADSL Working Group.

BROADBAND -- FINALLY

Broadband on-line access -- PC modem connections at speeds of 200 Kbps to 2 Mbps -- has been on the horizon for a decade. Now broadband's time has come (see Figure 1: *The Broadband Access Market* and the January, 1998 *People & Technology Strategies Report,* "Internet Access Winners"). Over the next five years, adoption will be driven by a confluence of:

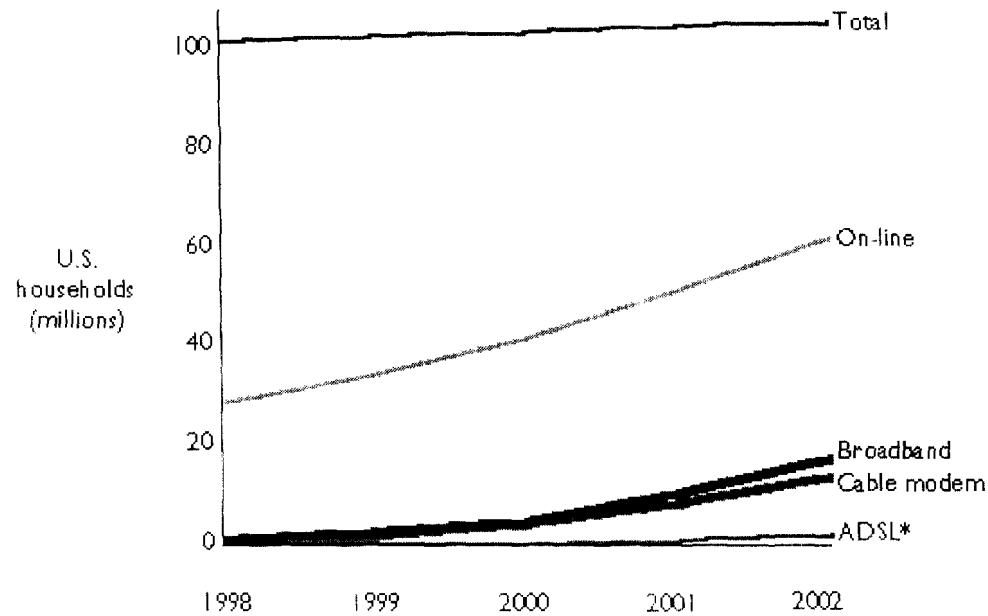
- **Compelling value.** Broadband access offers consumers high speed, always-on connections, and multiple services like phone and Internet on a single line. And the price is right -- broadband's price/ performance is five to 25 times better than dial-up (see Figure 2: *Broadband Offers Better Value*).

- **Eager consumers.** Forrester's *Consumers & Technographics*® Technographics '98 Field Study of 120,000 North American households finds that early broadband consumers are predominantly dial-up veterans looking for more speed and willing to pay premium prices. They have higher average incomes and are more likely to bank and shop on-line than their dial-up counterparts.

- **Ripe technologies.** Network technologies for high-speed access are maturing rapidly. Consumer prices for cable and ADSL modems will fall by 50% to $150 over the next two years as industry standards, supplier competition, and retail sales channels take hold.

- **A network shootout.** Cable operators and phone companies are building out broadband to fend off competitive incursions into their customer bases. Deployments are well under way by every major cable MSO and local telco in the United States (see Figure 3: *Major U.S. Service Providers Deploy Broadband*).

Figure 1 **The Broadband Access Market**



Household connections (millions)

Total broadband	0.7	2.2	4.7	9.2	15.8

Consumer services spending (millions)

Total broadband	$185	$710	$1,650	$3,235	$5,740

*ADSL = asynchronous digital subscriber line

Source: Forrester Research, Inc.

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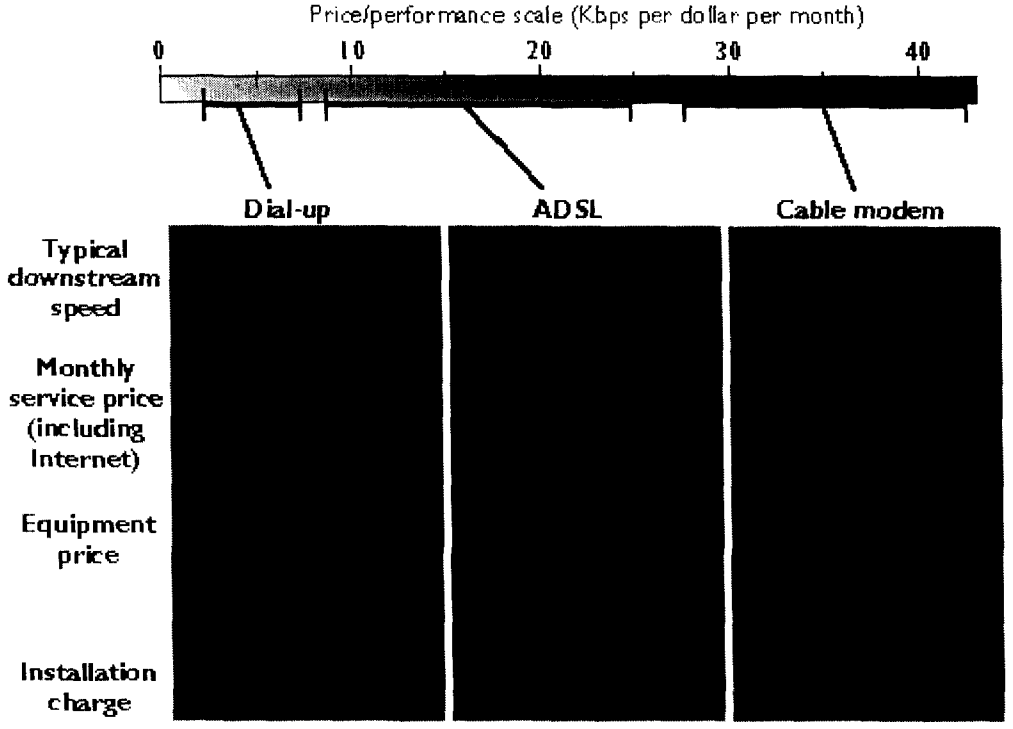
CABLE LEADS THE WAY

The cable industry is pioneering the deployment of broadband Internet access and reaping the subscriber rewards. Cable data services have a total of 350,000 subscribers in mid-1998, on track to hit 700,000 by year-end. We project that this total will grow to 2 million by the end of next year, on its way to more than 13 million in 2002.

Figure 2 **Broadband Offers Better Value**



Source: Forrester Research, Inc.

Service Availability Will Accelerate

The pace of broadband network deployment by the cable companies is set to pick up dramatically over the next three years as:

- **Network upgrades take hold.** An MSO's incremental cost for high-speed Internet service averages just $15 per home passed and returns a $40 per month per subscriber revenue opportunity. Operators justify the $200 per home cost of two-way digital networks on the basis of protecting core TV service revenue and adding premium and pay-per-view channels (see the March, 1998 *People & Technology Strategies Report*, "Cable's Digital Future").

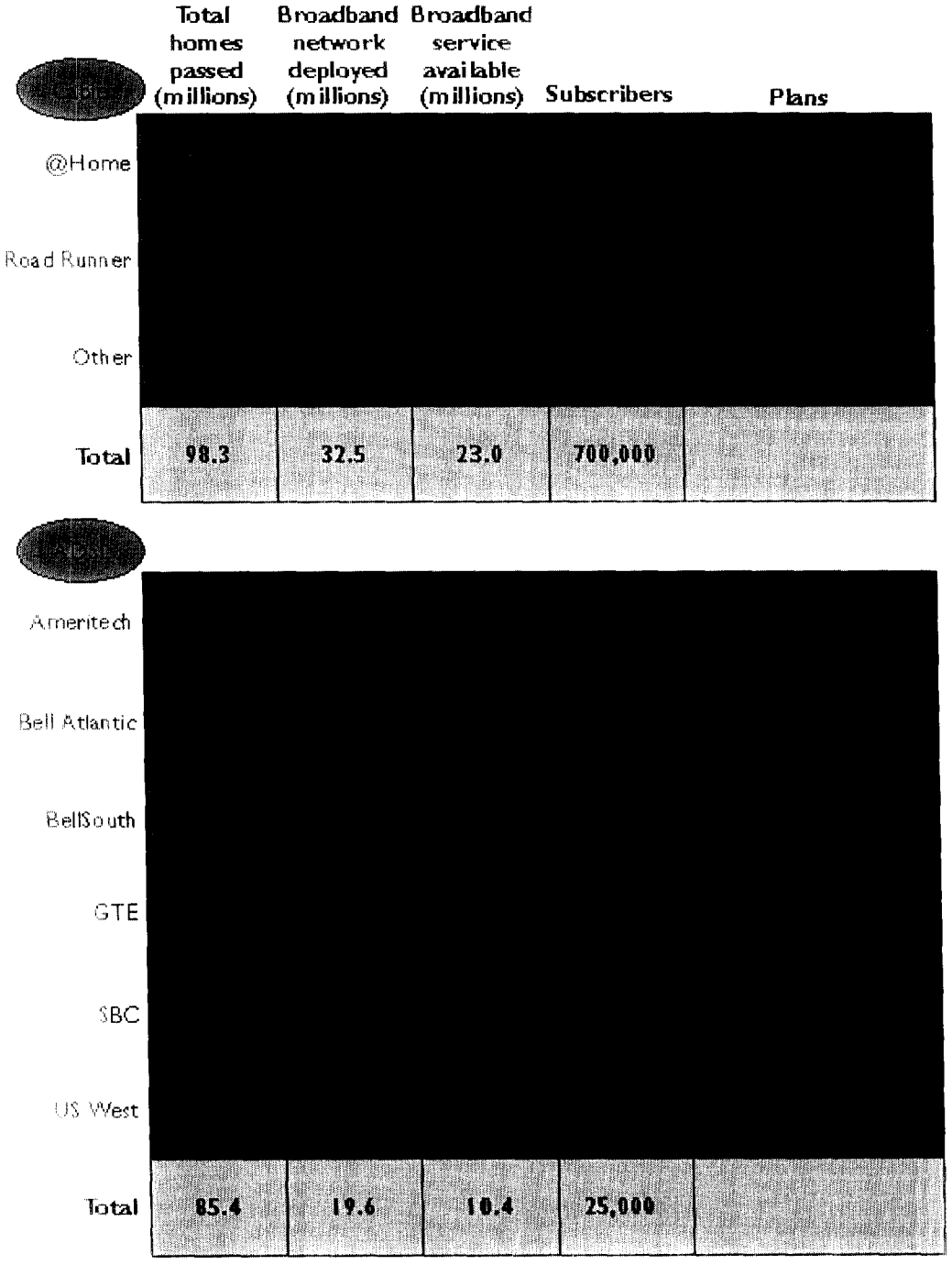
- **Cable modems go retail.** First shipments of standards-based consumer modems will hit retailers' shelves this quarter. Cutthroat competition among high-volume manufacturers like Sony and 3Com, current leaders Motorola and Bay, and newcomers like Com21 will bring retail prices now averaging $350 down to $150 by the end of next year. At those prices, manufacturers will shrink the cable modem down to a PC network card that Compaq or Dell can build right in.

- **More capital pours in.** Following Microsoft's $1 billion bet on Comcast, Microsoft and Compaq each put $210 million into Road Runner, magnate Paul Allen purchased Marcus and Charter systems, and AT&T spent $48 billion on giant TCI. Such infusions

of new capital allow operators simultaneously to deepen penetration in existing markets and expand data service to new cities.

- **Consumer awareness builds.** MSO promotions will push Internet service penetration from less than 1% nationally toward the 8% to 10% level seen in mature markets like Portland, Maine, where Time Warner has been active for 18 months. As MediaOne completes its two-way build-out in its Boston-area cluster, it will begin mass marketing on local TV and in newspapers, bringing on a new wave of dial-up graduates.

Figure 3 **Major U.S. Service Providers Deploy Broadband**



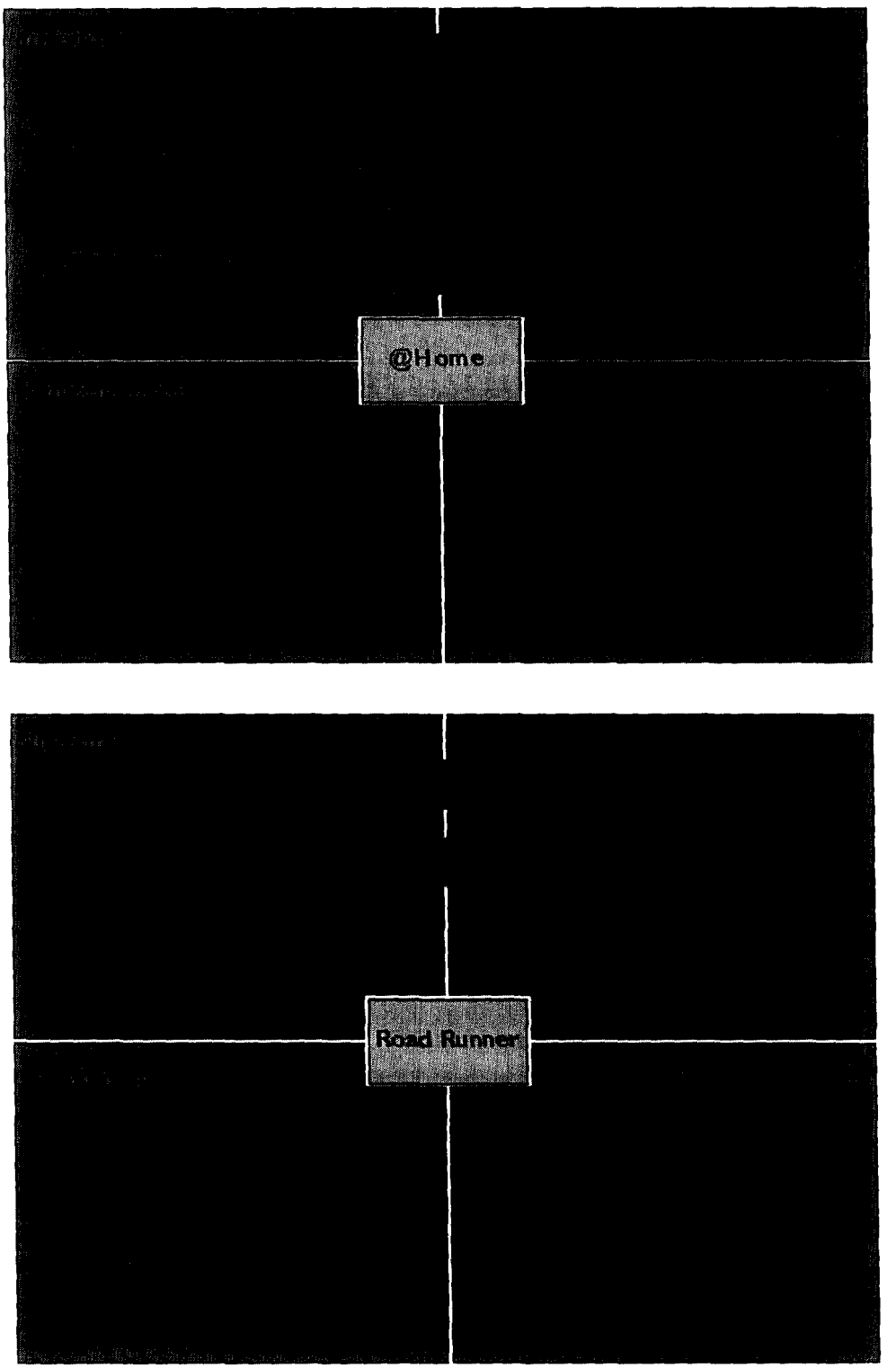
Estimates for year-end 1998.
Deployed means homes served or passed by an upgraded infrastructure

@Home And Road Runner Will Prosper

The two ventures created by cable operators to drive broadband Internet service will mimic the original AOL model by integrating customer marketing, content aggregation, and network technologies from a wide variety of partners (see Figure 4: *Cable's Internet Service Ventures*). This back-to-the-future strategy will succeed by:

- **Leveraging unique networks.** In many areas, a provider like Cox@Home will be the only broadband choice. To get the performance of high-speed access, many consumers will be willing to switch e-mail addresses, forgo AOL chat rooms, and accept a hard-wired start page.
- **Delivering end-to-end.** Both consortia are investing in national IP backbones and content caching centers to ensure that customers get the full benefit of broadband access. By controlling content hosting and delivery, they can mitigate network congestion that might otherwise degrade customers' experience.
- **Developing broadband content.** The cable services are investing now to create a content advantage for the future. Through their cable partners/owners, @Home and Road Runner gain access to content providers like CNN or Sony Music that have video assets that take consumers' Web experience to another level of engagement.
- **Becoming broadband portals.** @Home and Road Runner are on a collision course with portal leaders AOL, MSN, and Yahoo! (see the March, 1998 *Media & Technology Strategies Report*, "The Great Portal Shakeout"). They will heighten brand awareness by watermarking content sites developed with broadband content partners. To take advantage of always-on connections, we expect to see an @Home screen saver pushing information to idle PC screens.

Figure 4 **Cable's Internet Service Ventures**



Source: Forrester Research, Inc.

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AOL LIGHTS A FIRE UNDER THE TELCOS

Responding to the early success of cable Internet providers, local phone companies will bring broadband access to their customers -- but not before AOL prods them. As cable widens its broadband lead, AOL will take action to speed up slow, high-priced RBOC deployments of ADSL.

AOL Will Plug In Broadband

To meet the challenge of @Home and Road Runner, AOL will:

- **Introduce broadband service.** Next year, AOL will package ADSL to create a premium high-speed service tier. Its initial success will be hampered by limited service availability and a steep jump in price to $35 per month. Even so, by 2002 we expect 10% of AOL's members to be on a broadband service tier.

- **Build broadband features on its 4.0 client.** AOL's new client supports streaming video, standard Internet connectivity, and instrumentation for developers to create new broadband services. Broadband will allow AOL to create new generations of its bread-and-butter services, adding voice to chat and predictable, always-on connections to instant messaging.

- **Turn up the heat on ADSL.** Beginning on a small scale in 1999, AOL will require its network suppliers GTE and UUNET to upgrade their POPs and integrate telco ADSL lines. BellSouth and other telcos will discover the joys of wholesaling ADSL to AOL versus trying to retail it directly to consumers. But RBOCs will also feel the pinch of AOL's market muscle -- wholesale prices will have to be as low as $15 per month to allow AOL to price competitively with cable modem services.

- **Use cable where it can.** AOL will pursue deals with smaller MSOs outside the exclusive @Home and Road Runner families to package cable modem access with AOL services and content. It will also push regulators to force cable to unbundle its networks as telcos must; Forrester expects a sympathetic hearing but little action from the FCC until cable MSOs emerge as contenders in local phone service markets.

Telcos Slowly Roll Out ADSL

The RBOCs and GTE are rolling but with training wheels -- ADSL deployments this year vary widely in price, speed, and availability. Over the next 18 months, they must resolve several thorny issues to get ADSL off the ground. They must:

- **Standardize hardware.** Telcos and equipment manufacturers are rallying around the G.lite standards now being drafted. Another year of wrangling is in store before standards-based customer and central office equipment is available for deployment. By the end of 1999, PC manufacturers and retailers must offer standards-based hardware that is price-competitive with $150 cable modems.

- **Get prices in line.** To recover the $400-per-home cost of ADSL network equipment and $20 per month line cost, telcos have set their initial prices at $60 to $110 per month -- too high to compete with cable modem services. To appeal to mainstream consumers, BellSouth and US West must bet on higher market penetration and drop monthly rates below $50.

- **Broaden service reach.** Phone companies risk disappointing potential customers who live too far from a central office to receive ADSL service. Telcos will rely on new electronics from suppliers like Alcatel and Cisco to improve signalling so that 75% of homes served by upgraded switching offices can order the service, up from an average

of 55% today.

- **Avoid distractions.** Just as ADSL deployments get going, some telcos are casting their eyes toward ADSL's higher-speed cousin, VDSL (very high-speed DSL). Silicon vendors like Broadcom are singing a siren song, promising voice, video, and Internet services over a 50-Mbps downstream pipe. While it offers long-term salvation for telcos' copper, VDSL will only serve as a distraction from the broadband access market over the next two years.

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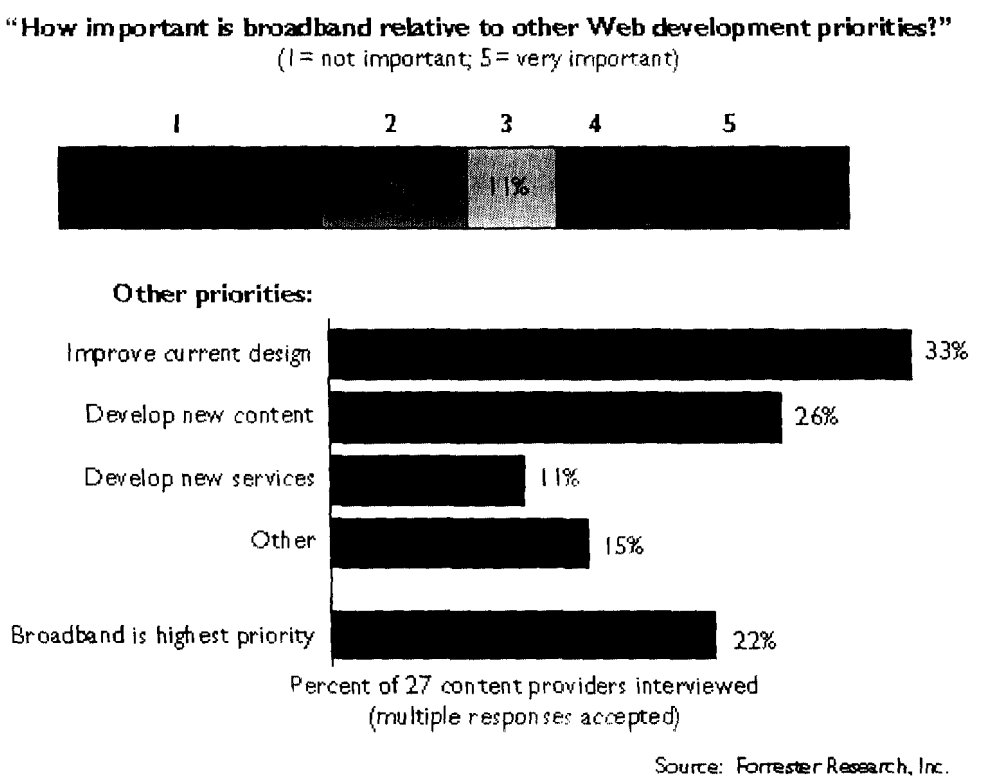
CONTENT KICKS IN

Content providers we interviewed see broadband offering faster and easier access to their Web sites, rather than requiring new development. Until a significant broadband audience exists, most developers are hard-pressed to make it a high priority (see Figure 5: *Broadband Is Not Yet A Development Priority*). But as broadband households approach 10 million in 2001, new content services and applications will drive another wave of consumer adoption.

Figure 5 **Broadband Is Not Yet A Development Priority**



Source: Forrester Research, Inc.

Service Providers Prime The Pump

To get the broadband content ball rolling, service providers are subsidizing development efforts. Cable Internet providers can leverage existing programming relationships into on-line content.

> "Our cable partners pay us a lot of money, so we bend over backwards to help them with their cable modem projects." (Entertainment site)

"MediaOne is one of our investors, so we develop broadband content that will be specific for its service." (Media site)

"@Home and US West are putting up money for us to develop streaming applications." (Content site)

New Applications Emerge

Despite a prevalent wait-and-see attitude, half of the Web developers we spoke with are building broadband content now. Providers in different industries are starting to see viable business cases for broadband.

"Broadband lets us create a unique breed of entertainment we call 'story dwelling.' It will have passive and active elements embedded within community and commerce on the Internet. Broadband helps us tap into consumers' emotional responses, making the Web a viable entertainment medium." (Entertainment site)

"Because of broadband, we are serving more streaming ads, which get click-through rates of 7% to 10%, instead of 1% with banners." (Content site)

"We want customers to do all their banking on our site. The key is broadband performance. Java applets and sophisticated graphics keep customers on the site, which helps us sell more service and make more profit." (Financial site)

Content Providers Should Act Now

Based on our interviews, we see several imperatives for Web content providers.

- **Don't count on business user experience.** Broadband consumers at home won't multitask on their computers as they do at the office. More focused and thoughtful on-line users mean a more receptive audience for entertainment, games, and other immersive content. But purposeful content design still matters -- simply shoveling video clips or animations into a site's broadband tier won't cut it.
- **Get subsidies while they're hot.** Right now, @Home and Road Runner are priming the pump. But once they reach millions of subscribers, they will require stockbrokers, content providers, and retailers to pay dearly for screen space. Entertainment developers in particular should latch on to broadband service providers early.
- **Engage your customers.** Always-on broadband takes the hassle out of applications like on-line banking and bill payment. It also creates a platform for analytical applets and advisory videos that guide investors' decision-making. Always-on connections will also revive push-to-screen-saver technologies, allowing Fidelity or AmEx to deliver up-to-date portfolio information, interest rates, and transaction come-ons.
- **Zoom in on local content.** A quarter of @Home's start page will be reserved for its cable affiliates to sign up local content providers. New England Cable News teams with MediaOne to provide news, sports, and weather. Job, real estate, and car listing sites should seek similar opportunities to lock up screen space.
- **Make commerce compelling.** Broadband will create a more conducive selling environment -- enabling Amazon to push music samples, Toys "R" Us to captivate kids with demos or cartoons, and Peapod to make grocery shopping easier and more fun.